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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,670	09/25/2003	Che-Hsiung Hsu	PE0673 US CIP	8334

23906 7590 09/06/2005

E I DU PONT DE NEMOURS AND COMPANY  
LEGAL PATENT RECORDS CENTER  
BARLEY MILL PLAZA 25/1128  
4417 LANCASTER PIKE  
WILMINGTON, DE 19805

EXAMINER
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SANDERS, KRIELLION ANTIONETTE

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/670,670	Applicant(s) HSU, CHE-HSIUNG	
Examiner Kriellion A. Sanders	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date 2/04, 3/04, 10/04. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1- 22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hsu,

PGPUB No. 20040124504.

Hsu discloses compositions comprising aqueous dispersions of electrically conducting organic polymers and a plurality of nanoparticles. Suitable conductive organic polymers are the polyanilines and polythiophenes. Compositions according to the invention typically contain a continuous aqueous phase in which the electrically conducting organic polymer is dispersed. Electrically conductive organic polymers contemplated for use in the practice of the invention include all forms of the polyanilines (e.g., leucoemeraldine, emeraldine, nigraniline), which are capable of forming acid/base salts to render the polymers electrically conductive. Patentee indicates that it is known that in the presence of an acid (such as, poly(2-acrylamido-2-methyl-1-propanesulfonic acid (PAAMPSA), poly(styrenesulfonic acid) (PSS)), the basic nitrogen atoms will be protonated to form a salt. Thus, for example, when aniline is oxidatively polymerized in the presence of PAAMPSA, the electrically conductive acid/base salt PANi/PAAMPSA is formed. When ethylenedioxythiophene (EDT) is oxidatively polymerized in the presence of PSS, the electrically conductive acid/base salt poly(ethylenedioxythiophene) (PEDT)/PSS is formed. Nanoparticles contemplated for use in the practice of the present invention can be either

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inorganic or organic. Inorganic nanoparticles contemplated for use in the practice of the invention include alumina, silica, metallic nanoparticles, electrically semiconductive metal oxides, and the like. In one embodiment, the electrically semiconductive metal oxide is selected from mixed valence metal oxides, such as zinc antimonates, and the like. In another embodiment, the metallic nanoparticles are molybdenum nanoparticles. Organic nanoparticles contemplated for use in the practice of the invention include colloidal sulfonic acids (such as perfluoroethylene sulfonates, and the like), polyacrylates, polyphosphonates and carbon nanotubes. Nanoparticles contemplated for use in the practice of the invention typically have an average particle diameter less than about 500 nm. In another embodiment, the nanoparticles have an average particle diameter less than about 100 nm. In still another embodiment, the nanoparticles have an average particle diameter less than about 50 nm. In another embodiment, the aspect ratio of elongated nano-particles is greater than 1 to 100. Aspect ratio is defined as ratio of particle width to particle length. For elongated particles, the "particle size" is considered to be the particle width. In another embodiment, the nano-particles have an irregular geometry. For irregularly-shaped particles, the "particle size" is considered to be size of the smallest screen opening through which the particle will pass.

Patentee presents specific claims to the compositions wherein:

the weight ratio of silica:electrically conductive polymer is about 4:1.

the weight ratio of electrically conductive oxides:electrically conductive polymer is about 1.5:1.

Patentee presents a specific claim to compositions of a high resistance buffer layer comprising an electrically conductive polymer and a plurality of nanoparticles dispersed therein.

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Patentee presents specific claims to compositions comprising:

A high resistance buffer layer wherein said electrically conductive polymer is selected from PANi/PAAMPSA and PEDT/PSS.

A high resistance buffer layer wherein said nanoparticles are inorganic nanoparticles.

A high resistance buffer layer wherein said inorganic nanoparticles are selected from silica, alumina, or electrically conductive metal oxides.

A high resistance buffer layer wherein said nanoparticles are organic nanoparticles.

A high resistance buffer layer wherein said organic nanoparticles are selected from polyacrylates, carbon nanotubes, and perfluoroethylene sulfonates

A high resistance buffer layer, wherein said layer has a conductivity of less than about  $1 \times 10^{-3}$  S/cm.

A high resistance buffer layer, wherein said layer has a conductivity of less than about  $1 \times 10^{-5}$  S/cm.

An organic light emitting diode (OLED) comprising a high resistance buffer layer comprising an electrically conductive polymer and a plurality of nanoparticles dispersed therein.

An OLED, wherein said electrically conductive polymer is selected from PANi/PAAMPSA or PEDT/PSS.

An OLED, wherein said nanoparticles are inorganic nanoparticles.

There is no patentable difference between the present and patented inventions.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122.

The examiner can normally be reached on Monday through Thursday 6:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kriellion A. Sanders  
Primary Examiner  
Art Unit 1714

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